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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/055,775	01/23/2002	Steven Mark Eker	SRI/4578-2	8753

7590

02/24/2004

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EXAMINER

LY, CHEYNE D

ART UNIT	PAPER NUMBER
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1631

DATE MAILED: 02/24/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/055,775	EKER ET AL.	
	Examiner	Art Unit	
	Cheyne D Ly	1631	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 15 December 2003.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-111 is/are pending in the application.
- 4a) Of the above claim(s) 25-98 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-24 and 99-111 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☒ Claim(s) 1-111 are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. §§ 119 and 120

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
* See the attached detailed Office action for a list of the certified copies not received.
- 13) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application) since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.
a) ☐ The translation of the foreign language provisional application has been received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121 since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 9, 5, 7.
- 4) ☐ Interview Summary (PTO-413) Paper No(s). _____
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____

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DETAILED ACTION

1. Applicant's election without traversal of Group I, claims 1-24 and 99-111, filed December 15, 2003, is acknowledged.
2. Claims 1-24 and 99-111 are examined on the merits.

CLAIM REJECTIONS - 35 USC § 101

3. 35 U.S.C. 101 reads as follows:

Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

4. Claims 1-24, and 99-111 are rejected under 35 U.S.C. 101 because the claimed invention is directed to non-statutory algorithm type subject matter.

5. Claims 1-22 are rejected because said claims are directed to a method comprising processes performed within a computer system. The transformation of signals or data inside a computer merely manipulates concepts or converts one set of numbers into another without producing a useful, concrete, and tangible result. (MPEP § 2106 (IV)(B)(2) (b)).

6. Claims 23, 24, 105, and 106 are rejected because said claims are directed to an article of machine-readable media comprising chemical data which are considered descriptive material wherein said material is either functional, a system and computer readable media; or non-functional. The chemical data of the instant invention are regarded as descriptive non-functional descriptive material; thereby, causes the claimed invention to be non-statutory subject matter. The MPEP indicates that descriptive material that cannot exhibit any functional interrelationship with the way in which computing processes are performed does not constitute a statutory process, machine, manufacture or composition (MPEP § 2106 (IV)(B)(1) (b)). Specific to the instant case, the article of machine-readable media merely stores chemical data so as to be read

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without creating any functional interrelationship, either as part of the stored data or as part of the computing processes performed by the article of machine-readable media, then such descriptive material alone does not impart functionality either to the data as so structured, or to the computer. (MPEP § 2106 (IV)(B)(2) (a)).

7. Further, it is acknowledged that the article of machine-readable media comprises steps or means for performing a Boolean function on said data, however, the Boolean function is a characteristic function of said machine. The Boolean function does not create any functional interrelationship, either as part of the stored data or as part of the computing processes performed by the computer, therefore, such descriptive material alone does not impart functionality either to the data as so structured, or to the computer. Further, computer systems normally perform functions for the manipulating data, usually in binary form, perform mathematical operations, such as addition, subtraction, multiplication, division, or bit shifting, on the said data. (MPEP § 2106 (IV)(B))

8. Claims 99-104 and 107-111 are rejected because said claims are directed to a method comprising processes for performing a mathematical algorithm. The claim invention directed to claims 99-104 and 107-111 consists solely of mathematical operations without some claimed practical application (i.e., executing a “mathematical algorithm”); or simply manipulate abstract ideas, without producing a useful, concrete, and tangible result. (MPEP § 2106 (IV)(B)(1)).

CLAIM REJECTIONS - 35 U.S.C. § 112, SECOND PARAGRAPH

9. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

10. Claims 2, 5, 6, 10, and 21 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

11. Specific to claim 2, the phrase “identified set” causes the claim to be vague and indefinite because it is unclear whether the identified set is of the precursor compounds or target compounds. Clarification of the metes and bounds is required.

12. Claim 5 recites the limitation "the number of elements" in lines 1-2. There is insufficient antecedent basis for this limitation in the claim.

13. Specific to claim 6, line 3, the abbreviations “LHS/RHS” causes the claim to be vague and indefinite. Abbreviations in claims are vague and indefinite unless accompanied by the full name, usually in parentheses.

14. Specific to claim 10, the phrase “least-cost path” causes the claim to be vague and indefinite because it is unclear what criteria is being used to determine that a specific path is of “least-cost path” (distance or energy). Clarification of the metes and bounds is required.

15. Claim 21 recites the limitation "the transformed model" in line 2. There is insufficient antecedent basis for this limitation in the claim.

CLAIM REJECTIONS - 35 USC § 102

16. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

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A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

17. Claims 1-18, 20-24, 99-107, and 109-111 are rejected under 35 U.S.C. 102(b) as being clearly anticipated by Akutsu et al. (2000).

18. Akutsu et al. discloses a method and computer program for generating network models for molecular processes using Boolean functions wherein data is captured from microarray hybridization chemical reactions (page 727, Abstract etc., Introduction §, columns 1-2). The inference of S-systems is directed to the Michaelis-Menten equation, which expresses enzymatic reactions involving one substrate and one product (page 730, column 2, Inference of S-systems §, lines 5-9). The method of generates values (predetermined) from the Boolean function corresponding to targets (Tables 1 and 2), as in instant claims 1, 6, 7, 12, 15-17, 22-24, and 99-101. Further, it is inherent in the cited method above that identified precursor compounds are used to produce set of target compounds via chemical reactions.

19. Akutsu et al. discloses it is more difficult (insufficient) to monitor the concentration of proteins from RNA due to long delays of interaction (page 733, column 1, lines 9-15), as in the alternative embodiment of instant claim 1.

20. The code for the method of Akutsu et al. is in the if-then-else normal form (page 728, column 2, lines 31-44) comprising a fixed constant (page 729, column 1, lines 1-4), which is used for defining nodes on a network model (page 729, column 1, lines 18-25), as in instant claims 8 and 20.

21. Akutsu et al. cites Akutsu et al. (1999) in a method for mapping expression patterns to a Boolean network (page 727, column 2, lines 5-8 and page 728, column 2, 7-11). The Boolean

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network of Akutsu et al. (1999) comprises of a set of nodes (expression state) with paths wherein two lower nodes either a node that maps to another expression of the set or a terminal node (branch-and-bound algorithm) (page 20, Figure 1), as in instant claims 9, 10, 18, 19, 21, 102, 104, and 108. The inclusion of Akutsu et al. (1999) is not being used as prior art, but only to expand on the citation of a reference (Akutsu et al. (1999)) by Akutsu et al.

22. The method of Akutsu et al. has been demonstrated with data wherein $n = 10, 20, 40, 80$, and 160 (reactions sets) wherein a network is generated for each case (page 731, column 1, Computational Results§), as in instant claims 2-5, 11, 13, 14, 103, 107 and 111.

23. The method of Akutsu et al. has been implemented on SSYS-1 using a Sun Ultra-2 Workstation and commercial software SOPT (page 731, columns 1-2, Results on S-systems §), as in instant claims 23, 24, 105, and 106.

CONCLUSION

24. NO CLAIM IS ALLOWED.

25. Papers related to this application may be submitted to Technical Center 1600 by facsimile transmission. Papers should be faxed to Technical Center 1600 via the PTO Fax Center located in Crystal Mall 1. The faxing of such papers must conform with the notices published in the Official Gazette, 1096 OG 30 (November 15, 1988), 1156 OG 61 (November 16, 1993), and 1157 OG 94 (December 28, 1993) (see 37 CFR § 1.6(d)). The CM1 Fax Center number is (703) 872-9306.

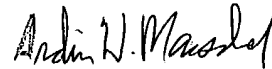
26. Any inquiry concerning this communication or earlier communications from the examiner should be directed to C. Dune Ly, whose telephone number is (571) 272-0716. The examiner can normally be reached on Monday-Friday from 8 A.M. to 4 P.M.

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27. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Michael Woodward, Ph.D., can be reached on (571) 272-0722.

28. Any inquiry of a general nature or relating to the status of this application should be directed to Legal Instruments Examiner, Tina Plunkett, whose telephone number is (571) 272-0549 or to the Technical Center receptionist whose telephone number is (703) 308-0196.

C. Dune Ly
2/10/04


ARDIN H. MARSCHEL
PRIMARY EXAMINER